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EXAMINER
HSU, JONI

ART UNIT	PAPER NUMBER
2671	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

<table>
<tr><td rowspan="2">Office Action Summary</td><td>Application No.
09/691,794</td><td>Applicant(s)
KAMEN ET AL.</td></tr>
<tr><td>Examiner
Joni Hsu</td><td>Art Unit
2671</td></tr>
</table>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 6-15* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 6-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Response to Amendment

1.   In light of Applicants' amendments to Claims 4-8 and 12, the 35 U.S.C. 112 rejections

are withdrawn.

2.   Applicant's arguments with respect to claims 1-3 and 5-15 have been considered but are

moot in view of the new ground(s) of rejection.

3.   Applicant's arguments, see pages 8-10, filed April 5, 2005, with respect to the

rejection(s) of claim(s) 10-14 under 35 U.S.C. 102(e) and claims 1-3, 5-9, and 15 under 35

U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been

withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view

of Hicok (US006266753B1).

4.   Applicant argues that Wishoff (US006300962B1) does not disclose a set top box that first

checks for memory types to find a preferred type of memory (page 8, lines 1-3).

        In reply, the Examiner agrees. However, new grounds of rejection are made in view of

Hicok. Hicok describes dynamic load balancing between local media memory (410, Figure 4)

and system memory (420) (Col. 3, line 60-Col. 4, line 11). Dynamic load balancing may occur if

local memory becomes full or is near full. Data may be re-allocated to the system memory (Col.

7, lines 31-40). Therefore, Hicok first checks to see if local memory is available, and if not, then

allocates to the system memory, and therefore checks for memory types to find a preferred type

of memory.

5.   Applicant argues that Wishoff does not disclose dividing a set of texture maps into two

graphics where the total size of the texture maps in a first group is the largest possible sum of

texture map sizes for which the total size of the texture maps is less than the preferred first

memory size and the total size of a second group is the difference between the total size of the

set of texture maps and the total size of the first group (page 8, lines 3-7).

        In reply, the Examiner disagrees. Wishoff describes that first, the memory manager

allocates available contiguous video memory (235, Figure 6; Col. 6, lines 2-7). If the total size

of the set of texture maps is larger than the memory size (238, 242; Col. 6, lines 25-35), or

greater than the available contiguous video memory, then the memory manager reallocates the

video memory into non-contiguous video memory, so it divides the set of texture maps into at

least two groups. Wishoff describes a best fit memory allocation scheme, which involves finding

the piece of memory closest to the size of the allocation request (237, Figure 6; Col. 6, lines 14-

24). Therefore, the memory distributor distributes the texture maps to a preferred first memory,

which is the available contiguous memory, if the total size of the texture maps is less than or

equal to the available first memory size, and the total size of the texture maps in the first group is

the largest possible sum of texture map sizes for which the total size of texture maps in the first

group is less than the memory size. The second group's total size is the difference between the

total size of the set of texture maps and the total size of the first group.

6.   Applicant argues that Leftwich (US 20030037336A1) neither teaches nor suggests a set

top box which determines whether a type of memory exists and then distributes and saves texture

maps based on the types of memory found (page 8, lines 14-16).

In reply, the Examiner agrees. However, new grounds of rejection are made in view of

Hicok. Hicok describes dynamic load balancing between local media memory (410, Figure 4)

and system memory (420) (Col. 3, line 60-Col. 4, line 11). Dynamic load balancing may occur if

local memory becomes full or is near full. Data may be re-allocated to the system memory (Col.

7, lines 31-40). Therefore, Hicok first checks to see if local memory is available, and if not, then

allocates to the system memory, and therefore checks for memory types to find a preferred type

of memory.

7.   Applicant argues that Kenworthy (US005852443A) does not disclose a set-top box which

determines what types of memories it comprises and thereafter distributes and stores texture

maps according to the types and sizes of memories present within the set-top box (page 9, lines

10-13).

In reply, the Examiner agrees. However, new grounds of rejection are made in view of

Hicok. Hicok describes dynamic load balancing between local media memory (410, Figure 4)

and system memory (420) (Col. 3, line 60-Col. 4, line 11). Dynamic load balancing may occur if

local memory becomes full or is near full. Data may be re-allocated to the system memory (Col.

7, lines 31-40). Therefore, Hicok describes determining what types of memories the system

comprises and thereafter distributes and stores texture maps according to the types and sizes of

memories present.

8.   Applicant argues that Behrbaum (US006326973B1) does not teach or suggest searching

for types of memories within a set-top box and dividing the memory according to the formula set

forth in the present invention (page 10, lines 1-3).

In reply, the Examiner agrees. However, new grounds of rejection are made in view of

Hicok. Hicok describes dynamic load balancing between local media memory (410, Figure 4)

and system memory (420) (Col. 3, line 60-Col. 4, line 11). Dynamic load balancing may occur if

local memory becomes full or is near full. Data may be re-allocated to the system memory (Col.

7, lines 31-40). Therefore, Hicok describes determining what types of memories the system

comprises and thereafter distributes and stores texture maps according to the types and sizes of

memories present.

9.   Applicant argues that Hicok does not teach or suggest checking for memory types to find

a preferred type of memory and dividing a set of texture maps into two groups where the total

size of the texture maps in a first group is the largest possible sum of texture map sizes for which

the total size of texture maps is less than the preferred first memory size and the total size of a

second group is the difference between the total size of the set of texture maps and the totals size

of the first group (page 10, lines 12-17).

In reply, the Examiner disagrees. Hicok describes dynamic load balancing between local

media memory (410, Figure 4) and system memory (420) (Col. 3, line 60-Col. 4, line 11).

Dynamic load balancing may occur if local memory becomes full or is near full. Data may be

re-allocated to the system memory (Col. 7, lines 31-40). Therefore, Hicok describes checking

for memory types to find a preferred type of memory. Wishoff describes that first, the memory

manager allocates available contiguous video memory (235, Figure 6; Col. 6, lines 2-7). If the

total size of the set of texture maps is larger than the memory size (238, 242; Col. 6, lines 25-35),

or greater than the available contiguous video memory, then the memory manager reallocates the

video memory into non-contiguous video memory, so it divides the set of texture maps into at

least two groups. Wishoff describes a best fit memory allocation scheme, which involves finding

the piece of memory closest to the size of the allocation request (237, Figure 6; Col. 6, lines 14-

24). Therefore, the memory distributor distributes the texture maps to a preferred first memory,

which is the available contiguous memory, if the total size of the texture maps is less than or

equal to the available first memory size, and the total size of the texture maps in the first group is

the largest possible sum of texture map sizes for which the total size of texture maps in the first

group is less than the memory size. The second group's total size is the difference between the

total size of the set of texture maps and the total size of the first group.

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or
> described as set forth in section 102 of this title, if the differences between the subject
> matter sought to be patented and the prior art are such that the subject matter as a whole
> would have been obvious at the time the invention was made to a person having ordinary
> skill in the art to which said subject matter pertains. Patentability shall not be negatived
> by the manner in which the invention was made.

11.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

     1.   Determining the scope and contents of the prior art.
     2.   Ascertaining the differences between the prior art and the claims at issue.
     3.   Resolving the level of ordinary skill in the pertinent art.
     4.   Considering objective evidence present in the application indicating obviousness
           or nonobviousness.

12.   Claims 1-3, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Wishoff (US006300962B1) in view of Hicok (US006266753B1), further in view of Leftwich

(US 20030037336A1).

13.   With regard to Claim 1, Wishoff describes a system comprising a memory analyzer (50,

Figure 2) for analyzing set-top box layout (*video memory management in a set-top box*, Col. 1,

lines 9-12) to allocate memory (Col. 2, lines 59-65) by specifying the size of the memory needed

(Col. 3, lines 33-37) and determining if a sufficient amount of memory is available (Col. 4, lines

17-22; Col. 6, lines 3-7). Therefore, the memory analyzer determines sizes of memory available

in the set-top box, the memory analyzer being coupled to a memory distributor (104, Figure 3),

wherein the system determines a storage size necessary for storing the texture maps defining one

or more images and the memory distributor distributes the texture maps defining one or more

images (*specifies the size of the memory needed, video memory allocator*, Col. 3, lines 34-63).

According to the disclosure of this application, digital images, or video images, are considered to

be texture maps (page 12, line 20). Wishoff describes that first, the memory manager allocates

available contiguous video memory (235, Figure 6; Col. 6, lines 2-7). If the total size of the set

of texture maps is larger than the memory size (238, 242; Col. 6, lines 25-35), or greater than the available contiguous video memory, then the memory manager reallocates the video memory into non-contiguous video memory, so it divides the set of texture maps into at least two groups. Wishoff describes a best fit memory allocation scheme, which involves finding the piece of memory closest to the size of the allocation request (237, Figure 6; Col. 6, lines 14-24). Therefore, the memory distributor distributes the texture maps to a preferred first memory, which is the available contiguous memory, if the total size of the texture maps is less than or equal to the available first memory size, and the total size of the texture maps in the first group is the largest possible sum of texture map sizes for which the total size of texture maps in the first group is less than the memory size. The second group's total size is the difference between the total size of the set of texture maps and the total size of the first group.

However, Wishoff does not teach determining types of memory available. However, Hicok describes dynamic load balancing between local media memory (410, Figure 4) and system memory (420) (Col. 3, line 60-Col. 4, line 11). Dynamic load balancing may occur if local memory becomes full or is near full. Data may be re-allocated to the system memory (Col. 7, lines 31-40). Therefore, Hicok discloses determining types of memory available.

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to modify the device of Wishoff to include determining types of memory available as suggested by Hicok. Hicok suggests that determining types of memory available and allowing dynamic load balancing between the different types of memory allows for performance and system resource optimization, which is an improvement over media units that are rigidly fixed and may only operate out of data in one particular type of memory (Col. 5, lines 13-16).

However, Wishoff and Hicok do not teach a data filter coupled to a text-to-image converter for converting filtered data into image data using texture maps. However, Leftwich describes a system comprising a data filter [0028]. The data is filtered by the cable provider (Figure 4; 30, Figure 1A). Therefore, the data filter is coupled to a text-to-image converter (42, Figure 1A) for converting filtered data into image data using texture maps (*converted to a format for display*, [0027]). Leftwich also describes the use of a set-top box [0021].

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to modify the devices of Wishoff and Hicok to include a data filter coupled to a text-to-image converter for converting filtered data into image data using texture maps as suggested by Leftwich because Leftwich suggests that there is an increasingly important dual need among users to both screen out unwanted programming and find desired programming. As the number of programs/events accessible increases, these issues will become even more important and strategies such as simple program ratings will not be effective or efficient enough to handle these interrelated user needs [0007]. Leftwich also suggests that in order to create an electronic program guide, the data must be converted into digital images [0027].

14.   With regard to Claim 2, Wishoff describes that a graphic application requires a certain amount of graphic memory (234, Figure 6; Col. 5, line 66-Col. 6, line 2), and inherently, this amount of graphic memory is needed to store a total size of the set of texture maps, which is a sum of all texture map sizes.

15.   With regard to Claim 3, Wishoff describes a processor executing a first logic in which the

total size of the set of texture maps is less than or equal to a memory size (235, Figure 6; Col. 6,

lines 2-7). The first logic is allocating available contiguous video memory (235, Figure 6).

Wishoff describes a second logic if the total size of the set of texture maps is greater than the

memory size (238, 242; Col. 6, lines 25-35), or greater than the available contiguous video

memory. The second logic reallocates the video memory into non-contiguous video memory, so

it divides the set of texture maps into at least two groups.

However, Wishoff does not teach that the processor is coupled to the data filter.

However, Leftwich describes a data filter [0028], as discussed in the rejection for Claim 1.

16.   With regard to Claim 6, Wishoff describes that the set of texture maps of the first group is

stored in a first memory (235, Figure 6; Col. 6, lines 2-7).

17.   With regard to Claim 7, Wishoff describes that the set of texture maps of the second

group is stored in a second memory, which is the non-contiguous memory (238, 242; Col. 6,

lines 25-35).

18.   Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wishoff

(US006300962B1), Hicok (US006266753B1), and Leftwich (US 20030037336A1) in view of

Kenworthy (US005852443A).

19.   With regard to Claim 8, Wishoff, Hicok, and Leftwich are relied upon for the teachings

as discussed above relative to Claim 3.

However, Wishoff, Hicok, and Leftwich do not teach that the set of texture maps of the

second group are compressed to fit into the first memory. However, Kenworthy describes the

use of a set-top box (Col. 6, lines 10-15) and that the set of texture maps are compressed to fit

into one memory (216, Figure 4A; Col. 9, lines 36-39; Col. 12, lines 8-13).

It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the devices of Wishoff, Hicok, and Leftwich so that the set of texture maps

of the second group are compressed to fit into the first memory as suggested by Kenworthy

because Kenworthy suggests that image compression technology has the advantage of reducing

the use of costly memories for high performance systems (Col. 7, lines 43-55).

20.   With regard to Claim 9, Wishoff, Hicok, and Leftwich do not teach a compression

engine. However, Kenworthy describes a compression engine (414, Figure 9A; Col. 19, lines

26-29).

It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the devices of Wishoff, Hicok, Leftwich to include a compression engine as

suggested by Kenworthy because Kenworthy suggests that a compression engine is needed in

order to perform image compression (Col. 19, lines 26-29), and the advantages of image

compression were discussed in the rejection for Claim 8.

21.   Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wishoff

(US006300962B1) in view of Hicok (US006266753B1).

22.   With regard to Claim 10, Wishoff describes a method comprising the graphic application

requiring a certain amount of graphic memory for the video data (234, Figure 6; Col. 5, line 64-

Col. 6, line 2). According to the disclosure of this application, digital images, or video images,

are considered to be texture maps (page 12, line 20). Therefore, Wishoff describes that the

graphic application inherently computes a total size of a set of texture maps. Wishoff describes

searching for types of memories in a set-top box; comparing the total size of the set of texture

maps with a size of a preferred first memory (237, 238; Col. 6, lines 14-31). First, the memory

manager allocates available contiguous video memory (235, Figure 6; Col. 6, lines 2-7). If the

total size of the set of texture maps is larger than the first memory size (238, 242; Col. 6, lines

25-35), or greater than the available contiguous video memory, then the memory manager

reallocates the video memory into non-contiguous video memory, so it divides the set of texture

maps into at least two groups. Wishoff describes a best fit memory allocation scheme, which

involves finding the piece of memory closest to the size of the allocation request (237, Figure 6;

Col. 6, lines 14-24). Therefore, the total size of the texture maps in the first group is the largest

possible sum of texture map sizes for which the total size of texture maps in the first group is less

than the first memory size and the total size of a second group is the difference between the total

size of the set of texture maps and the total size of the first group.

However, Wishoff does not teach searching for types of memories. However, Hicok

describes dynamic load balancing between local media memory (410, Figure 4) and system

memory (420) (Col. 3, line 60-Col. 4, line 11). Dynamic load balancing may occur if local

memory becomes full or is near full. Data may be re-allocated to the system memory (Col. 7,

lines 31-40). Therefore, Hicok discloses searching for types of memories. This would be

obvious for the same reasons given in the rejection for Claim 1.

23.   With regard to Claim 11, Wishoff describes that a graphic application requires a certain

amount of graphic memory (234, Figure 6; Col. 5, line 66-Col. 6, line 2), and inherently, this

amount of graphic memory is needed to store a total size of the set of texture maps, which is a

sum of all texture map sizes, and the graphic application computes this total size.

24.   With regard to Claim 12, Wishoff describes storing the set of texture maps in the first

memory if the total size of the set of texture maps is less than or equal to the first memory size

(235, Figure 6; Col. 6, lines 2-7).

25.   With regard to Claim 13, Wishoff describes storing the first group of texture maps in the

first memory (235, Figure 6; Col. 6, lines 2-7).

26.   With regard to Claim 14, Wishoff describes allocating available contiguous video

memory (235, Figure 6; Col. 6, lines 3-7) using a best fit memory allocation scheme (237; Col. 6,

lines 14-24), as discussed in the rejection for Claim 10. After performing this step, if sufficient

video memory does not exist (238; Col. 6, lines 25-32), or there are still texture maps that do not

fit into the available contiguous video memory, then the memory manager reallocates video

memory (242; Col. 6, lines 32-35) to non-contiguous video memory, or into two separate groups

of memory. Therefore, the second group of texture maps is stored in a second memory.

27.   Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wishoff

(US006300962B1) and Hicok (US006266753B1) in view of Behrbaum (US006326973B1).

       Wishoff and Hicok are relied upon for the teachings as discussed above relative to Claim

14.

       However, Wishoff does not teach compressing the second group of texture maps.

However, Hicok describes compressing texture data (Col. 9, lines 64-66) and dynamic load

balancing between local media memory (first memory, 410, Figure 4) and system memory

(second memory, 420) (Col. 3, line 60-Col. 4, line 11).

       It would have been obvious to one of ordinary skill in the art at the time of invention by

applicant to modify the device of Wishoff so that the method further comprises compressing the

second group of texture maps as suggested by Hicok because Hicok suggests that compressing

the texture maps is advantageous for both bandwidth and memory size issues (Col. 5, lines 14-

20).

       However, Wishoff and Hicok do not teach that the method further comprises

compressing the second group of texture maps to fit into the first memory if the second memory

is not available. However, Behrbaum describes shifting as much texture data as possible from

local graphic memory (first memory) to system memory (second memory) (Col. 4, lines 5-34) so

combining Behrbaum and Hicok, when no more system memory (first memory) is available, the

second group of texture maps are compressed to fit into the local graphic memory (second

memory).

It would have been obvious to one of ordinary skill in the art at the time of invention by

applicant to modify the devices of Wishoff and Hicok so that the method further comprises

shifting as much texture data as possible from local graphic memory (first memory) to system

memory (second memory) as suggested by Behrbaum because Behrbaum suggests many

advantages. One advantage is that the system memory has a well-cached host processor which

has much lower memory bandwidth requirements than does a 3-D rendering machine. Texture

access comprises perhaps the single largest component of rendering memory bandwidth, so

avoiding loading or caching textures in local graphics memory saves bandwidth (Col. 4, lines 5-

34).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,
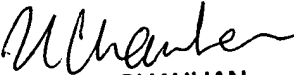
however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Joni Hsu whose telephone number is 571-272-7785. The

examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JH

ULKA J. CHAUHAN
PRIMARY EXAMINER